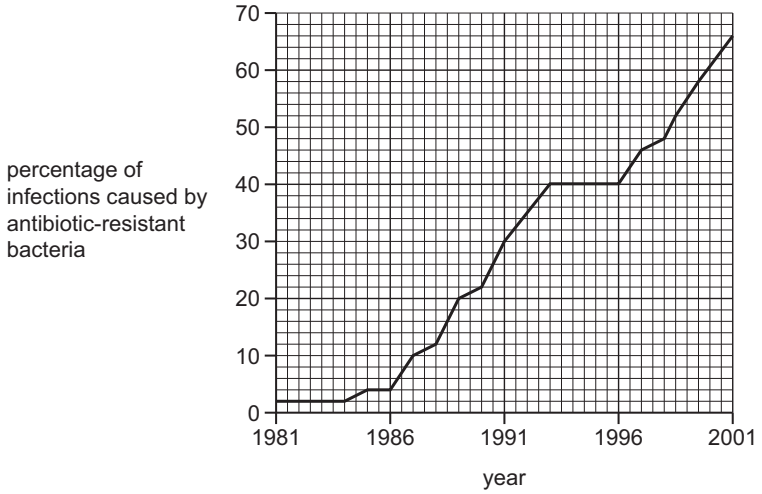
22 The graph shows the change in the percentage of infections caused by antibiotic-resistant bacteria in one country.



Which statements could explain the change in the percentage of infections caused by antibiotic-resistant bacteria?

1 The use of antibiotics has resulted in natural selection for resistant bacteria.

2 The use of antibiotics has caused a decrease in viral diseases.

3 The use of antibiotics when **not** essential increased the percentage of antibiotic-resistant infections.

A 1 and 2 **B** 1 and 3 **C** 2 and 3 **D** 3 only

2 Chickens are birds that are bred by farmers to produce eggs and meat. Modern farmed chickens are very different from the red junglefowl that is their wild ancestor.

Table 2.1 describes some of the characteristics of red junglefowl and farmed chickens.

Table 2.1

type of bird	mean body mass / g	mean number of eggs per year	mean mass of pectoral muscle / g	mean age at maturity / days
red junglefowl	775	12	91	142
chicken	4090	160	437	59

(a) (i) Using Table 2.1, calculate the percentage change in the mean body mass from the red junglefowl to the chicken.

Give your answer to **three** significant figures.

Space for working.

..... % [3]

(ii) Suggest reasons why farmers have selectively bred chickens to reach maturity faster than red junglefowl.

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..... [2]

(iii) Describe how a farmer could breed chickens with a larger body mass.

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[3]

(b) Chicken faeces can be used as a fertiliser.

Chicken faeces spread on agricultural land near lakes can act as a pollutant, and cause the destruction of the freshwater habitat.

Explain how the use of chicken faeces near freshwater lakes can lead to habitat destruction.

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..... [6]

(c) Chicken waste contains a substance that is similar to urea.

Explain how urea is made in humans.

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..... [3]

[Total: 17]

33 Which row correctly describes a type of selection?

	type of selection	humans involved	example
A	artificial	no	production of farmed animals that produce lots of milk
B	artificial	yes	production of bacteria that are resistant to antibiotics
C	natural	yes	production of insulin through genetic modification of bacteria
D	natural	no	production of wild animals with long necks to reach tree leaves as a food source

27 *Clostridium difficile* is a species of bacterium that is resistant to many antibiotics.

From 2002 to 2006, the number of people in one country infected with *Clostridium difficile* increased from 1300 to 6200 people.

What was the percentage increase in the number of people infected with *Clostridium difficile* from 2002 to 2006 to the nearest whole number?

A 21% **B** 27% **C** 79% **D** 377%

33 How does artificial selection differ from natural selection?

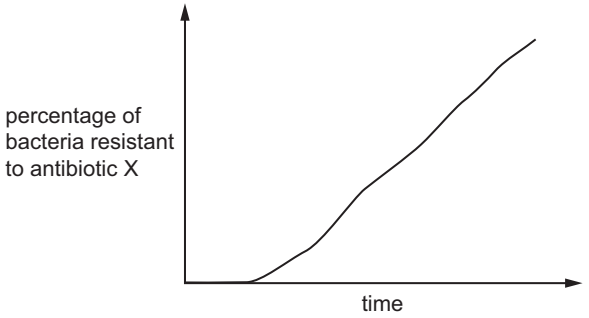
A Artificial selection changes the characteristics of living things.

B Artificial selection is based on genetic variation.

C Artificial selection does **not** involve competition for resources.

D Artificial selection occurs over many generations.

35 The graph shows the change in the percentage of bacteria resistant to antibiotic X.



What causes the change shown in the graph?

A artificial selection

B natural selection

C meiosis

D random fertilisation